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Infectious diseases in Finland 2001

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IMA 1998 - Family having picnic on the beach. LEHTIKUVA / MATTI KOLHO

Index

INTRODUCTION

The anthrax alert tested health care in 2001

Year 2001 was epidemiologically relatively uneventful. The exception was the 'flour letter outbreak' in the postal system, which followed the anthrax cases in USA caused by bioterrorism. This 'alert exercise' tested the skills and capabilities of the health, police, environmental and civil protection authorities to act together in a co-ordinated manner under exceptional pressure. Predominantly the experiences from the collaboration were favourable, but also weaknesses in response capabilities were revealed. It became evident that improving the resources and capabilities to detect, investigate and control a bioterrorism incident needs to involve all levels of the existing organisations responding to outbreaks and epidemics. A separate bioterrorism response organisation should not be established, as the necessary methods and experience are identical. In addition, the organisations need knowledge and experience on rare pathogens, as well as trained reserve capacity, which can be mobilised.

Favourable developments included the decrease in the incidence of tuberculosis for the first time below 10 cases per 100 000 inhabitants, and the fall of laboratory confirmed cases of whooping cough to less than half of that during the preceding year, after a consistent increase for many years in the late 1990s.

Of concern are the two cases of diphtheria, one of them in an non-immunised newborn with no traceable connection to travel.

Development of the Infectious Disease Register supports the revision of the vaccination program

New challenges for development are in sight. In 2005, the healthy baby clinics will adopt a revised national vaccination program, in which the key change is the introduction of an acellular vaccine against whooping cough as part of a combination vaccine with five or six components. In the 2002-2003 influenza season vaccination against influenza will be offered for the first time in the national vaccination program to everyone aged 65 or older.

In addition, the city of Helsinki plans to offer pneumococcal polysaccharide vaccine to everyone aged 65 or older in the autumn of 2002. The surveillance for whooping cough, influenza and serious pneumococcal infections will be strengthened to assess the impact of these changes.

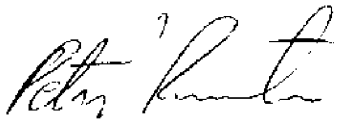
Data from the surveillance system and morbidity in the population

The proportion of findings notified electronically by the laboratories to the infectious disease register has continuously increased, and reached 70 % in 2001. This facilitates even faster transmission of data and information than before, which strengthens the use of this system in detecting epidemics and monitoring them. More than one half of the microbial findings causing respiratory infections are in the national register within one week from the collection of the sample, but the delay is at least

11 days in one quarter of the notifications, and at least three weeks in one tenth. This is excluding the findings based on paired sera. For providing as updated, and consequently most useful, data as possible the laboratories should notify their findings within one week from establishing the laboratory test result, preferably without any delay.

The figures on most infections under surveillance by the register do not directly measure the burden of disease caused by the infection (Figure 1). Only a small proportion of the patients falling ill with common diseases such as respiratory and acute intestinal infections seek health care and will undergo microbiological testing. However, when the health care and surveillance systems remain stable, these figures reflect well temporal trends. In order to assess the total disease burden caused by these diseases or causative microbial agents, e.g. for planning and justifying large-scale control measures, separate population based surveys need to be implemented. These will ascertain the proportion of the overall true morbidity in the population that is detected by the continuous surveillance system. It has been observed in surveys in different countries that, for example, the true number of cases in the population of salmonella infections is 4 to 40 times greater than that observed in the continuous surveillance system. In serious diseases such as tuberculosis and serious meningococcal infection patients seek health care, which performs comprehensive microbiological diagnostics. The figures from surveillance of these infections reflect well the total burden of disease.

The annual report aims at giving the annual statistics on the diseases under surveillance as well as comment acute events of the particular year and definitive changes in short term trends. As the time span of the infectious disease register, established in 1995, grows, the possibilities for more analytic use of the microbial and disease findings increase. More comprehensive analytic research is going on regarding the epidemiology of invasive infections caused by pneumococcus, *Streptococcus agalactiae* and *Staphylococcus aureus*. The microbial strains sent to the isolate collection of the infectious disease register further strengthen the possibilities to exploit the data.



Petri Ruutu
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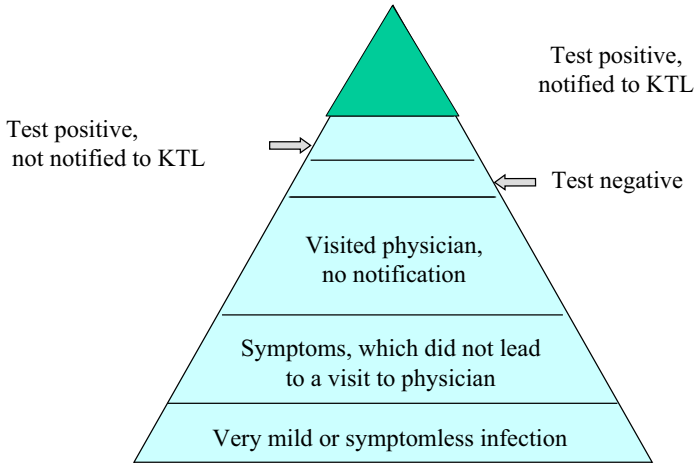
Surveillance and epidemiologic investigation

Figure 1.
The relationship of the number of notifications to infections in the population



RESPIRATORY INFECTIONS

Influenza A, B and parainfluenza

Influenza A cases were clearly fewer than in the preceding two years. However, the number of influenza B cases was more than double the average of previous years. In 2001 notifications were also done on non-typed influenza virus. These are based on rapid tests that do not differentiate between influenza A and B. These non-typed cases constituted nearly one quarter of all findings for influenza.

Parainfluenza cases were more numerous than before, nearly double compared to the preceding years.

Figure 2.
Influenza A, B and parainfluenza in 2001

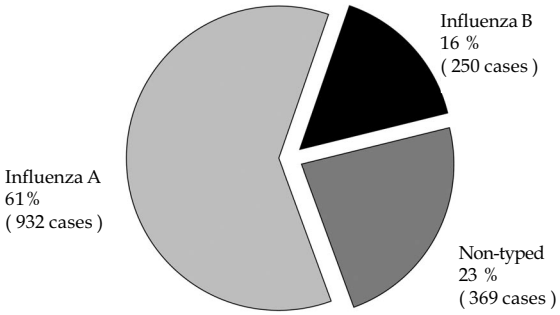


Figure 3.
Influenza A
January 1995 – March 2002

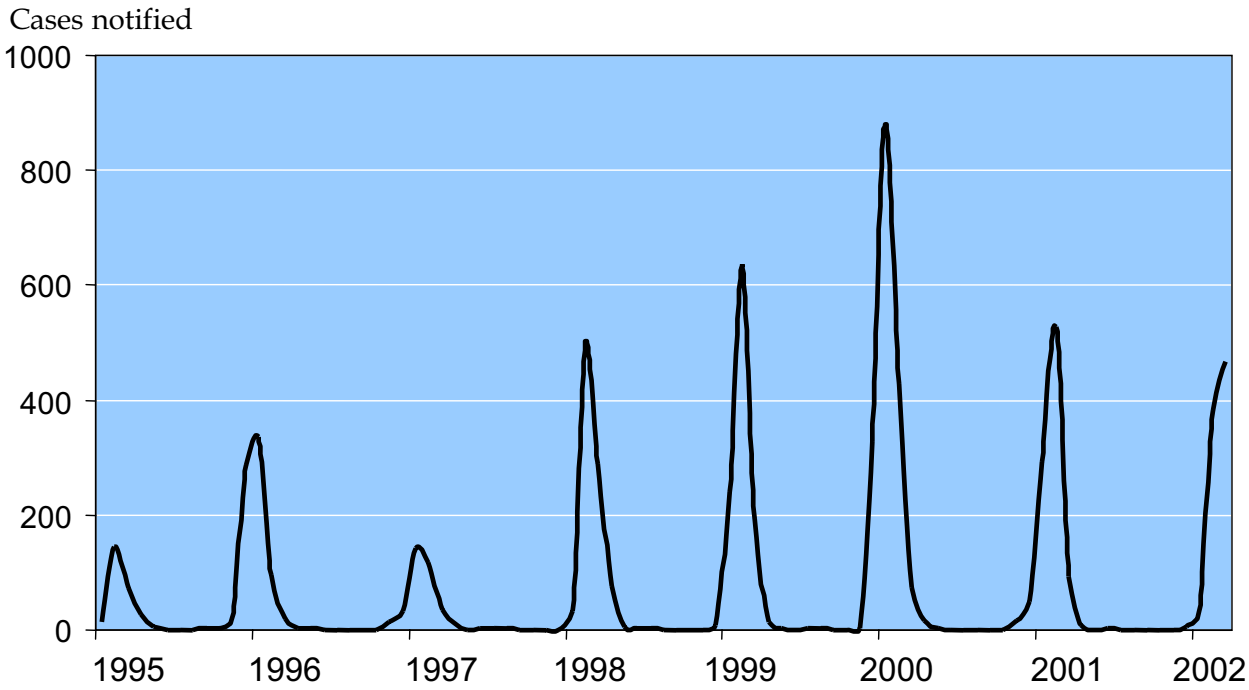
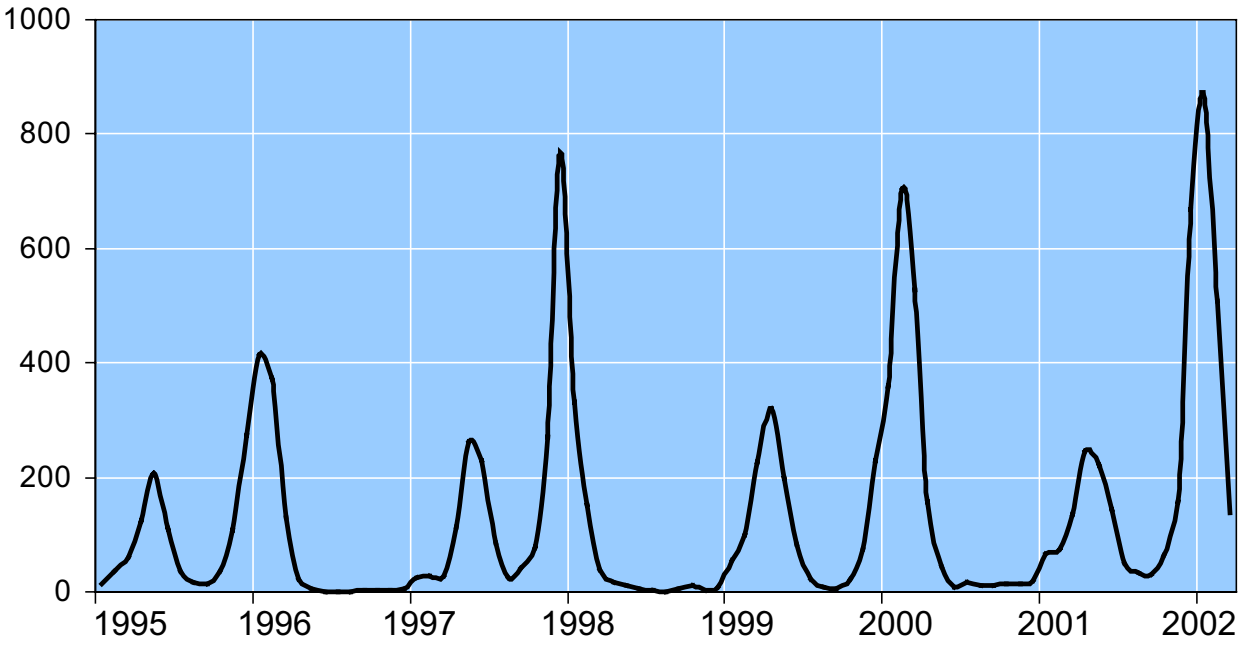


Figure 4.
Respiratory syncytial virus (RSV)
January 1995 – March 2002

Cases notified



Legionella

Seventeen Legionella cases were notified, which is approximately twice as many as in the preceding years. Approximately half of the cases had travelled abroad prior to falling ill. The diagnosis was based on the detection of antigen in urine in four cases, which is more than in the previous years, and suggests the increasing use of this diagnostic method.

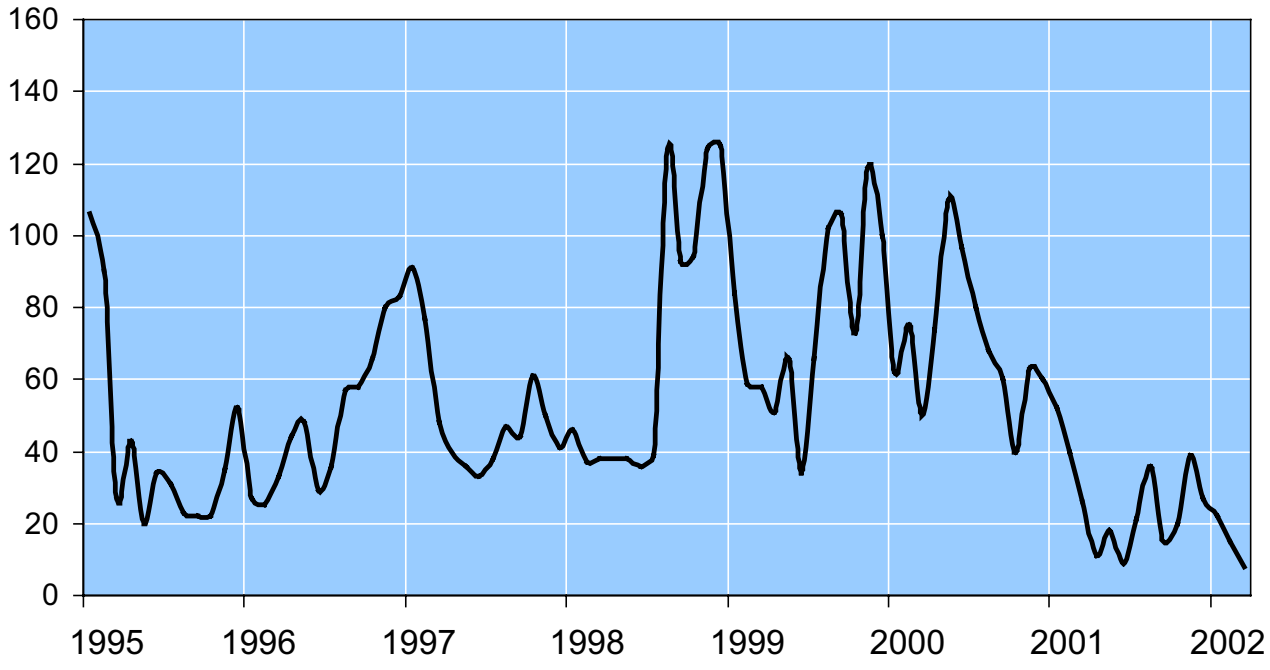
Whooping cough – *Bordetella pertussis*

The number of notified *Bordetella pertussis* cases was smaller than during any preceding year between 1995-2001. The number was clearly less than half of the average during preceding years, and only one third of that in 2000. A decrease was observed in all age groups and healthcare districts, but it was strongest in those healthcare districts with the highest incidence in the preceding years.

Table 1.
Distribution of whooping cough cases by age and sex in 2001

Age	male	female	total	cases/ 100 000 pop.
0	3	8	11	19,7
1	2	1	3	5,3
2	-	2	2	3,5
3	1	1	2	3,5
4	4	1	5	8,4
5	4	2	6	9,9
6	3	8	11	17,4
7	3	3	6	9,2
8	2	10	12	18,4
9	7	10	17	25,3
10	11	8	19	28,8
11	11	8	19	28,6
12	11	9	20	31,0
13	9	5	14	21,7
14	6	8	14	44,8
15	3	3	6	9,6
16	6	2	8	12,4
17	4	4	8	12,0
18	3	3	6	8,8
19	2	1	3	4,4
20	-	1	1	1,5
>20	31	91	122	3,2
total	126	189	315	6,1

Figure 5.
Bordetella pertussis
January 1995 – March 2002
Cases reported per month



Mycoplasma - *Mycoplasma pneumoniae*

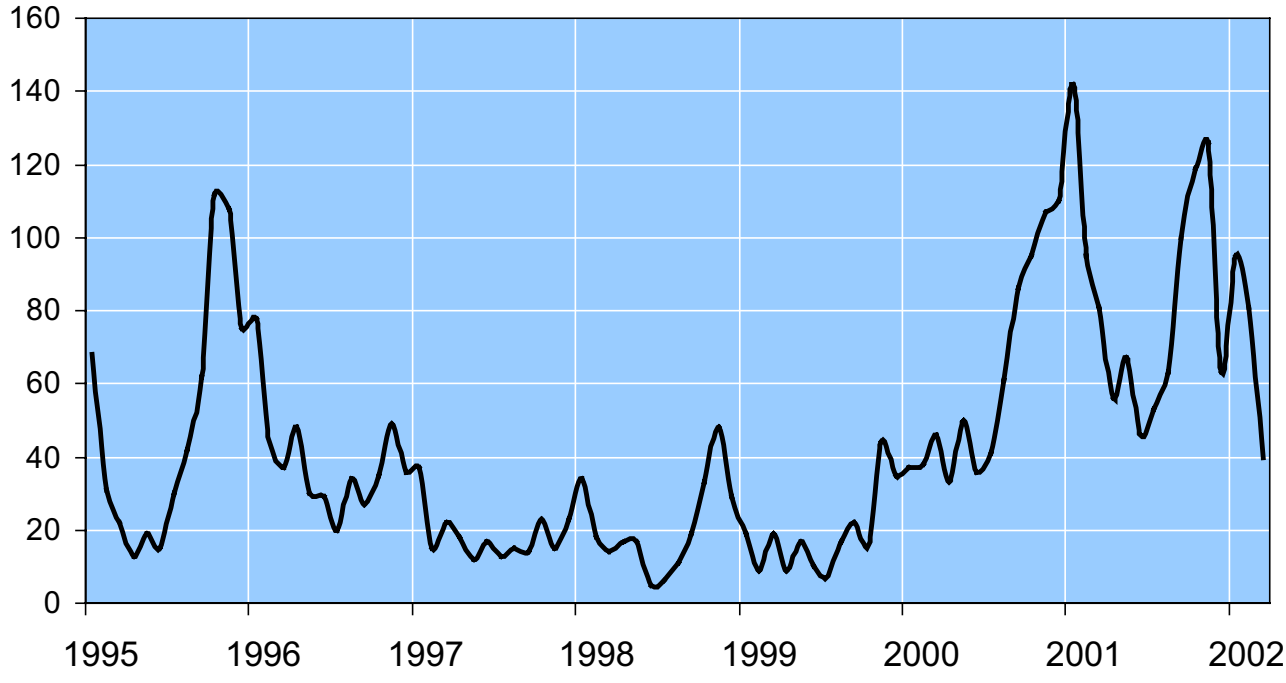
The number of notified *Mycoplasma pneumoniae* cases was one quarter higher than in 2000 and three times as many as the average number of cases in 1997-1999. The age distribution does not differ from that observed during the last six years.

Table 2.
Distribution of cases of *Mycoplasma pneumoniae* by age and sex in 2001

Age	male	female	total
0-4	43	32	75
5-9	90	75	165
10-14	91	94	185
15-19	93	62	155
20-24	43	36	79
25-29	14	32	46
30-34	12	58	70
35-39	23	54	77
40-44	23	40	63
45-49	12	31	43
50-54	8	22	30
55-59	1	10	11
60-64	1	4	5
65-69	1	3	4
70-74	1	-	1
75-	-	2	2
total	456	555	1 011

Figure 6.
Mycoplasma pneumoniae
January 1995 – March 2002

Cases notified per month



INTESTINAL INFECTIONS

The number of campylobacter notifications has steadily increased since 1997. In 2001, 3969 infections were notified, which is approximately 400 more than the year before. Also the number of shigella notifications (223 cases) increased considerably from previous years. Only 18 EHEC cases were notified, which is clearly less than during the previous three years. The number of salmonella and yersinia cases was about at the same level as before.

Salmonella outbreak in Riga

In May 2001, approximately half of a Finnish tourist group with 40 members fell ill with diarrhoea after a trip to Riga. The outbreak was investigated in collaboration with Latvian health authorities. A questionnaire study and microbiological findings confirmed that the source of infection was a yoghurt cake served in a restaurant in Riga. *Salmonella* Enteritidis PT4, which was resistant to nalidixic acid, was isolated from patient samples. In Riga, a salmonella strain was isolated from a yoghurt cake of the same batch, and further investigations confirmed that this strain also was *S*. Enteritidis PT4.

Yersinia pseudotuberculosis outbreak

Since 1997 at least one *Yersinia pseudotuberculosis* outbreak has occurred every year, and 2001 was not an exception. Since May 2001, cases were detected in different parts of Finland. Altogether 59 infections were diagnosed during the outbreak. A large case-control study was carried out to determine the source of the outbreak (45 cases, 180 controls). An association between Chinese cabbage and illness was found in the investigation. Two previous case-control studies (in 1998 and 1999) showed an association between iceberg lettuce and illness. Together the studies confirm that domestic salad products may be an important source of yersinia infections.

Shigella sonnei outbreak in Kouvola

In August 2001, a few *Shigella sonnei* infections were found among visitors to Tallinn. Later, *Shigella sonnei* infections were found also in Kymenlaakso healthcare district among persons who had not been abroad. Further investigations revealed that these persons had had lunch in the same popular restaurant. An employee of the restaurant had been in Tallinn in August and had become ill with gastroenteritis. Two other staff members were also infected. They were not treated with anti-microbials and returned to work before the cause of the outbreak was solved. The restaurant was closed immediately when the suspicion of the source was raised. During the outbreak, 41 shigella cases were detected; 40 of them had eaten in the restaurant and one was the child of a person infected in the restaurant.
(Kansanterveys 8-9/2001)

Waterborne outbreak in Kangaslampi

In August 2001, about 50 persons in Kangaslampi (close to the town of Varkaus) fell ill with gastroenteritis. *Campylobacter jejuni* was isolated from stool samples of symptomatic persons. Campylobacter was not detected from water samples. However, a questionnaire study showed an increased risk of illness among those who had drunk mains water. The water system was probably contaminated with campylobacter during maintenance and cleaning work carried out before the onset of the outbreak.

Waterborne outbreak in Vihti

In October 2001, approximately 1000 people fell ill with gastroenteritis in Vihti. Suspicion of a waterborne outbreak was raised from the very beginning, and a boil-water notice was issued and water chlorination started. *Campylobacter jejuni* was isolated from more than 50 stool samples. Also samples from a ground water well of the municipal water system yielded *C. jejuni*. Environmental samples taken from the immediate surroundings of the well also yielded *C. jejuni*. Flooding close to the contaminated water source may have resulted in infiltration of bacteria to the ground well water. The contaminated well is currently taken out of use.

Waterborne outbreaks caused by campylobacter in Finland

Four large campylobacter outbreaks caused by contaminated municipal mains water have occurred in the country between 1998 and 2001. Three of them have been in August. The exact mechanism of contamination has remained unclear, but investigation of each water system has revealed several risk sites, where the contamination may have occurred. Thus, it seems that in Finland more should be invested in the safety of ground water systems.

Table 3.
Salmonella infections acquired domestically or during travel 1995-2001

Five most common serotypes

1995		1996		1997		1998		1999		2000		2001	
Domestically acquired infections													
S. Enteritidis	397	*S.* Typhimurium	190	*S.* Typhimurium	495	*S.* Typhimurium	179	*S.* Typhimurium	307	*S.* Typhimurium	114	*S.* Typhimurium	135
S. Typhimurium	278	*S.* Enteritidis	116	*S.* Enteritidis	92	*S.* Enteritidis	62	*S.* Enteritidis	80	*S.* Enteritidis	52	*S.* Enteritidis	68
S. Stanley	102	*S.* Infantis	26	*S.* Hadar	33	*S.* Newport	60	*S.* Agona	69	*S.* Agona	33	*S.* Agona	37
S. Infantis	76	*S.* Stanley	15	*S.* Infantis	23	*S.* Infantis	15	*S.* Infantis	8	*S.* Hadar	17	*S.* Infantis	15
S. Panama	26	*S.* Typhim. v Cph	13	*S.* Newport	20	*S.* Stanley	13	*S.* Hadar	8	*S.* Virchow	14	*S.* Hadar	11
others	180		109		136		107		94		84		98
Total	1059		469		799		436		566		314		364
Infections acquired abroad													
S. Enteritidis	939	*S.* Enteritidis	891	*S.* Enteritidis	853	*S.* Enteritidis	874	*S.* Enteritidis	838	*S.* Enteritidis	1002	*S.* Enteritidis	1176
S. Typhimurium	114	*S.* Typhimurium	141	*S.* Typhimurium	122	*S.* Typhimurium	110	*S.* Hadar	95	*S.* Typhimurium	183	*S.* Typhimurium	123
S. Infantis	105	*S.* Virchow	140	*S.* Virchow	76	*S.* Virchow	78	*S.* Typhimurium	90	*S.* Hadar	113	*S.* Hadar	88
S. Virchow	73	*S.* Hadar	62	*S.* Hadar	47	*S.* Hadar	71	*S.* Virchow	73	*S.* Virchow	47	*S.* Virchow	74
S. Hadar	47	*S.* Infantis	55	*S.* Agona	31	*S.* Infantis	58	*S.* Stanley	31	*S.* Braenderup	47	*S.* Stanley	58
others	798		830		694		758		613		709		707
Total	2076		2118		1823		1949	yhteensä	1740		2101		2226
Country of transmission not notified													
Total	161	total	145	total	263	total	349	total	495	total	209	total	144
Grand total	**3296**		**2732**		**2885**		**2734**		**2801**		**2624**		**2734**

Data of the Infectious Disease Register have been supplemented with the date of the Laboratory of Enteric Bacteria (1995-2001)

Figure 7.
The 12 month moving average in 1995-2001 of Salmonella and Camplylobacter cases

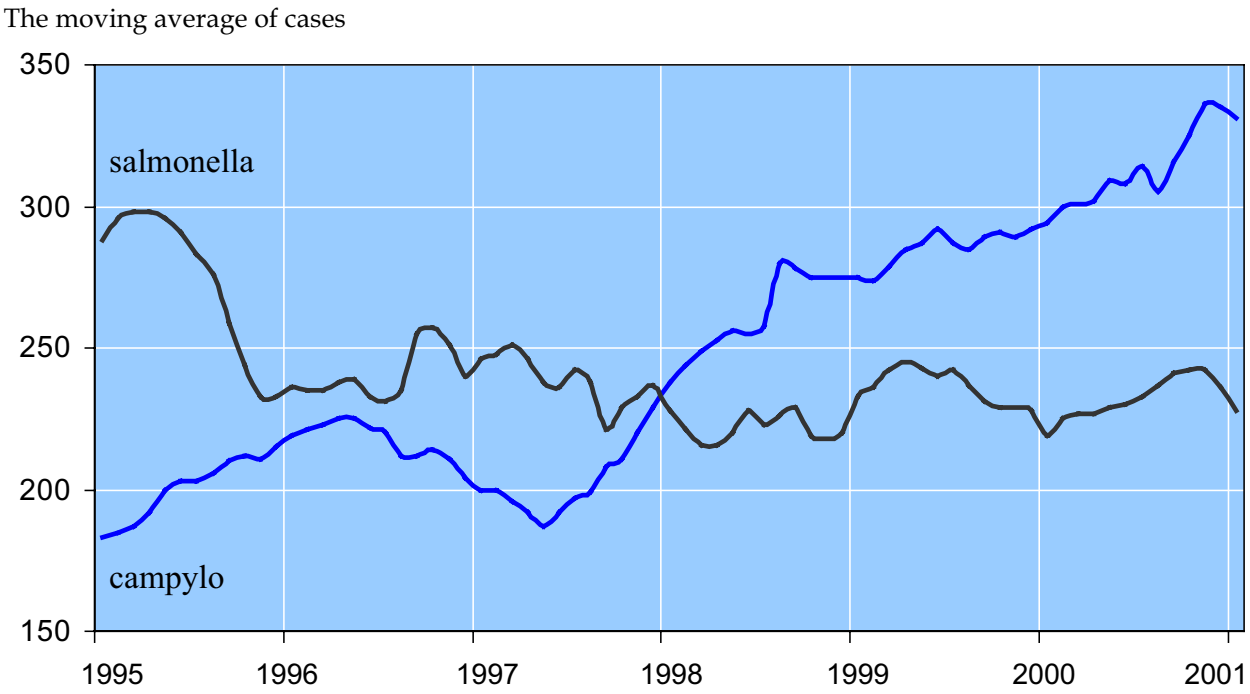


Figure 8.
Cases of *Yersinia enterocolitica* and *Yersinia pseudotuberculosis* in 1995-2001

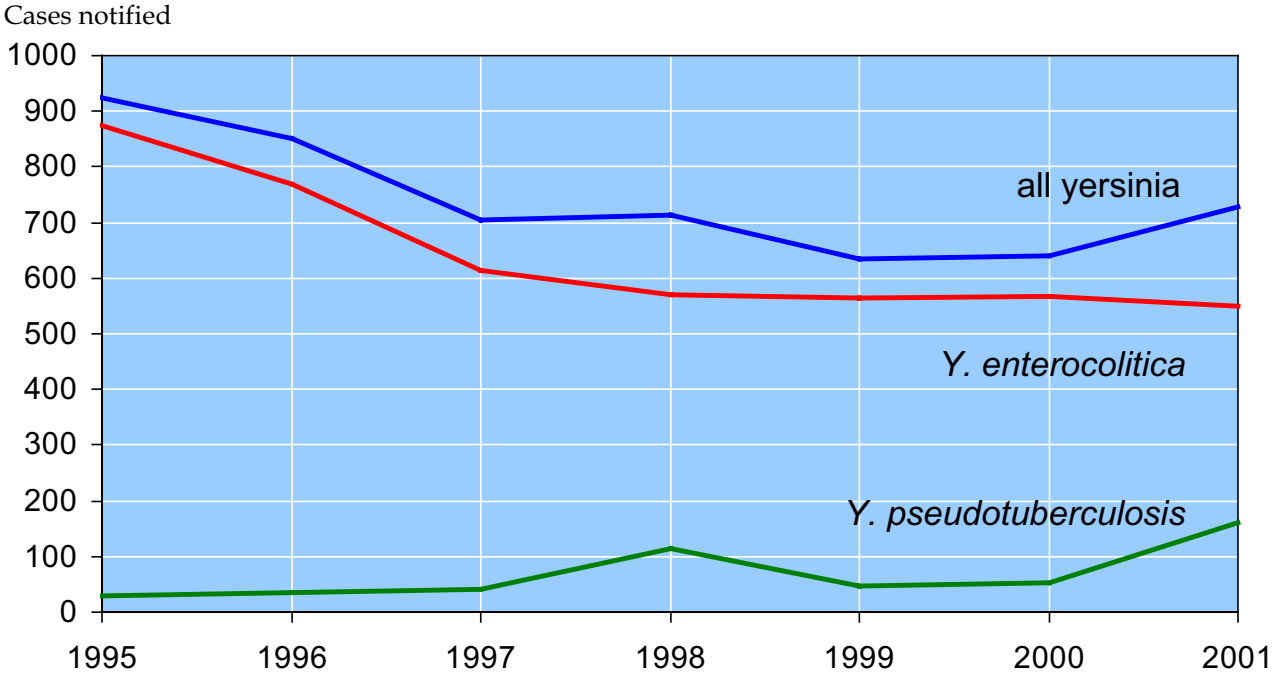
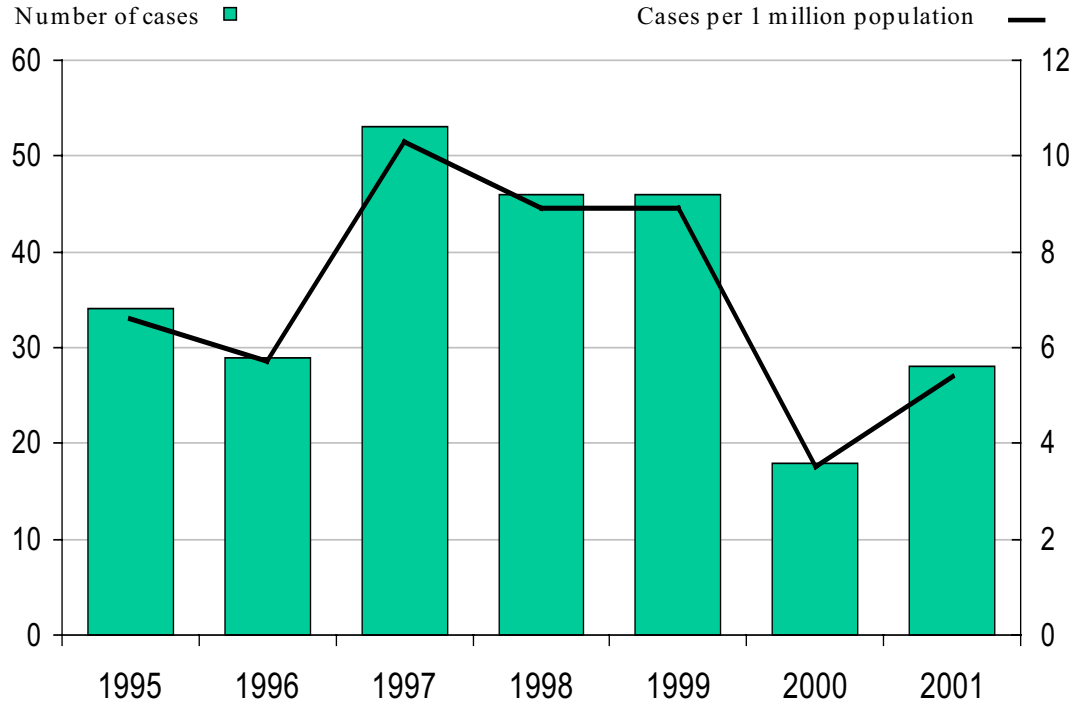


Figure 4.
Shigella infections acquired domestically or during travel in 1995-2001

	1995	1996	1997	1998	1999	2000	2001
Domestically acquired infections							
total	5	13	11	8	5	9	59
Infections acquired abroad							
total	67	82	84	73	62	60	161
India	16	14	20	8	2	10	10
Turkey	8	15	3	20	6	2	6
Egypt	3	8	9	1	11	15	52
Country of transmission not notified							
total	1	12	9	7	4	6	3
All cases							
total	**73**	**107**	**104**	**88**	**71**	**75**	**223**

Data of the Infectious Disease Register have been supplemented with the data of the Laboratory of Enteric Bacteria (1995-2001)

Figure 9.
The incidence of listeriosis in 1995-2001



HEPATITIS

Hepatitis B (HBV) and hepatitis C (HCV)

The number of new hepatitis B- and C- infections shows a slight but significant decrease compared to previous years. The number of cases classified as acute hepatitis B is 50 per cent smaller than the long-term average since 1995. An increasing number of HBV vaccinations has been administered among risk groups for several years probably contributing to this.

The number of notified hepatitis C is 300-400 cases smaller than the average of the previous years, a significant decrease. Preventive work among drug addicts, such as needle exchange programmes may explain this. Age distribution is, however, still weighted towards the young age groups, most cases having been notified among those 20-29 year old, but a number of cases have also been notified among those 15-19 year old. Forty-nine cases were reported among children less than 5 years old which is in accordance with previous estimates that about 50 HCV-positive women deliver a baby annually. Only very few become infected but antibodies from the mother are detectable for several months explaining most of the findings.

Figure 5

Distribution of cases of acute hepatitis B and all the cases of hepatitis C by age and sex in 2001

	Acute hepatitis B		All hepatitis C	
Age	male	female	male	female
0-4	1	-	30	19
5-9	-	1	-	1
10-14	1	1	-	2
15-19	6	9	99	95
20-24	8	8	257	102
25-29	12	5	178	70
30-34	14	2	158	59
35-39	10	3	100	45
40-44	9	5	72	25
45-49	8	2	65	24
50-54	5	6	24	10
55-59	3	1	9	6
60-64	1	-	3	5
65-69	2	-	5	5
70-74	-	-	4	5
75-	3	1	4	9
total	83	44	1008	482

Table 6.

Method of transmission of acute hepatitis B and of all hepatitis C cases in 2001

Method of transmission*	Acute hepatitis B	All hepatitis C
injecting drug use	28	777
sex	42	41
perinatal	-	2
blood products**	1	18
not known/not notified	56	652

* Method of transmission informed by physicians

** Most of the infections have been acquired outside Finland or before 1994. In three cases there is no further information.

Figure 10.
Acute hepatitis B and all hepatitis C cases in 1995-2001

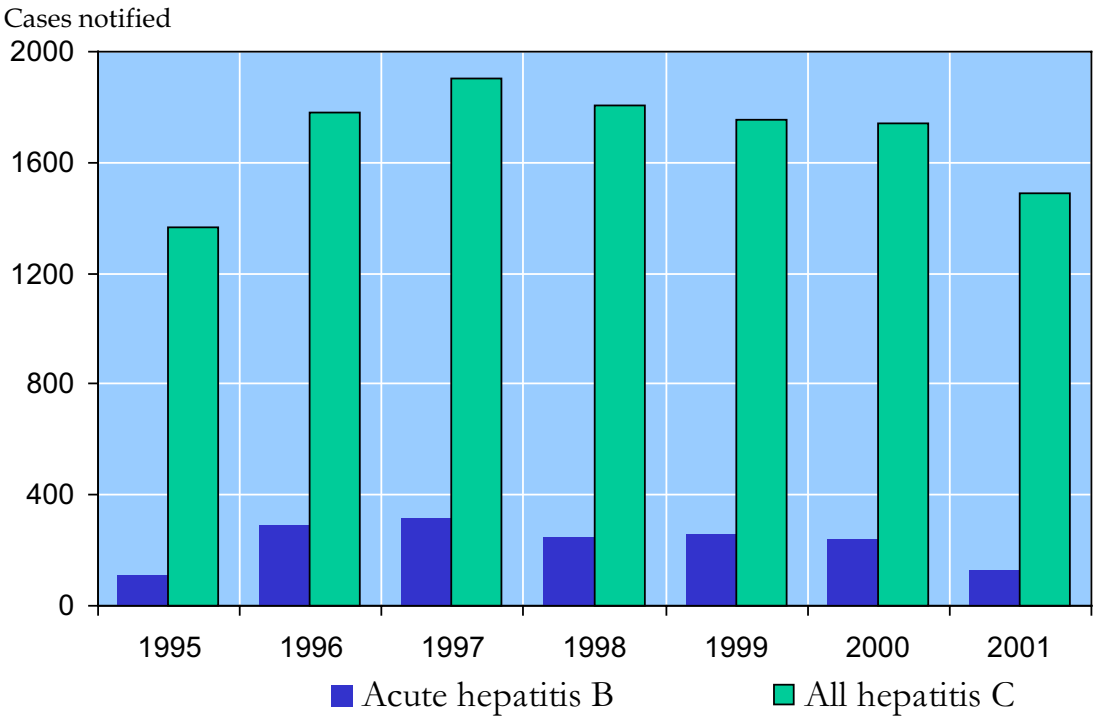
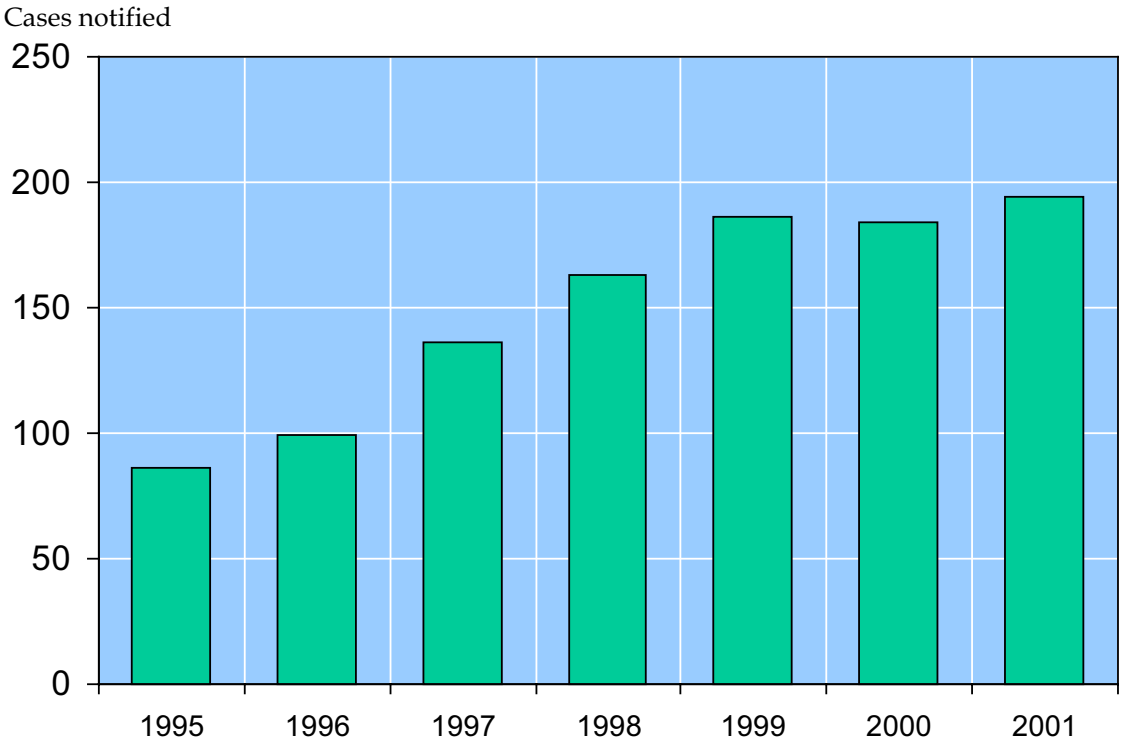


Figure 11.
Hepatitis C cases aged 15-19 in 1995-2001



SEXUALLY TRANSMITTED DISEASES

Chlamydial infection – *Chlamydia trachomatis*

The number of chlamydial infections has increased continuously since 1995. In 2001 laboratories reported 12 142 new cases The increase was 411 cases compared to 2000. The incidence of chlamydial infection was 234/ 100 000 inhabitants. Chlamydial infection was detected in 7 507 women (62%). The incidence was highest in the healthcare districts of Lappi and Keski-Suomi. The amount of chlamydial infections among adolescents has increased. Of women with chlamydial infection 35 % and of men 14% were under 20 years of age. One reason for the increase of chlamydial infections might be the increase in testing due to more sensitive diagnostic methods from the urine.

Gonorrhoea – *Neisseria gonorrhoeae*

The number of gonorrhoea cases decreased compared to 2000. In 2001 altogether 247 gonorrhoea cases were reported, 201 (81%) in men and 46 (19%) in women. Most gonorrhoea cases were detected in the eastern part of Finland, in the healthcare districts of Pohjois-Karjala and Kymenlaakso. In men 49% of the cases were imported, mainly from Russia (42%) and Thailand (23%). *N. gonorrhoeae* strains resistant to ciprofloxacin were mainly imported from the Far East. Women contracted gonorrhoea in Finland (89%) and only four cases were imported.

Syphilis – *Treponema pallidum*

In 2001 altogether 159 syphilis cases were reported, of which 90 (56%) in men and 69 (44%) in women. 20% of the cases were detected in the age group of over 70 years mainly due to serological scars of previously treated infection. There were no reports of congenital syphilis. Most syphilis cases were detected in the healthcare districts of Etelä- and Pohjois-Karjala. In men the source country was reported in 74% of the cases and 75% of the infections were imported, mainly (78%) from Russia. In women the source country was reported only in 43% of the cases and 60% of these cases were endemic.

Figure 12.
Sexually transmitted diseases in 1990-2001

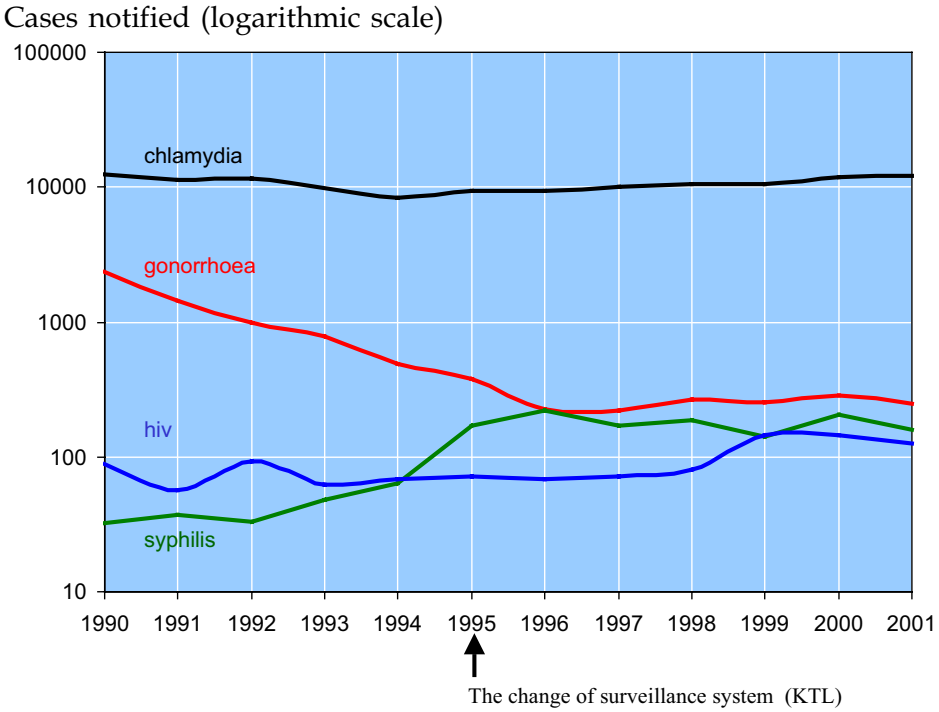


Table 7.
Gonorrhoea, chlamydia and syphilis cases by age and sex in 2001

Age	Gonorrhoea male	Gonorrhoea female	Chlamydia male	Chlamydia female	Syphilis male	Syphilis female
0-4	-	-	5	4	-	-
5-9	-	-	-	1	-	-
10-14	-	-	3	50	-	-
15-19	5	10	654	2 607	1	1
20-24	31	10	2 024	2 973	4	13
25-29	34	10	1 000	996	7	9
30-34	43	6	434	455	8	2
35-39	35	2	259	226	7	4
40-44	19	2	122	104	13	7
45-49	14	3	61	49	11	1
50-54	11	1	45	20	13	3
55-59	5	2	16	11	9	1
60-64	2	-	5	6	6	2
65-69	1	-	4	3	3	2
70-74	-	-	1	1	1	4
75-	1	-	2	1	7	20
total	201	46	4 635	7 507	90	69

HIV/AIDS

Table 8.
HIV infections in Finland 1990-2001

year	total	female	foreigner	method of transmission sex between males	hetero-sex	injecting drug use	blood-products*	peri-natal	not known
1990	89	13	26	44	37	-	1	-	7
1991	57	10	23	21	23	1	-	-	12
1992	93	21	29	34	38	5	-	-	16
1993	62	16	16	18	32	4	2	-	6
1994	69	14	14	34	25	2	1	1	6
1995	72	28	22	25	40	1	-	-	6
1996	69	20	29	23	36	1	-	-	9
1997	71	24	19	19	42	-	-	1	8
1998	81	32	22	13	32	20	-	-	16
1999	143	39	18	13	28	86	-	1	14
2000	145	51	39	23	43	56	1	2	18
2001	128	33	32	27	23	48	-	-	29

*) the latest infection transmitted by blood products in Finland occurred in 1985

Table 9.
AIDS in Finland 1990-2001

year	total	female	foreigner	method of transmission sex between-male	hetero-sex	injecting drug use	blood-products*	peri-natal	not known
1990	17	1	3	15	1	-	-	-	1
1991	27	2	1	22	4	-	-	-	1
1992	22	4	3	9	7	3	2	-	1
1993	25	3	2	16	5	1	3	-	-
1994	43	4	5	28	13	1	-	1	-
1995	41	3	9	24	14	1	1	-	1
1996	24	2	3	16	4	2	-	1	1
1997	19	2	4	11	6	2	-	-	-
1998	15	3	4	7	6	-	-	-	2
1999	11	2	2	7	3	-	-	1	-
2000	16	7	5	4	9	1	-	-	1
2001	19	7	5	8	7	1	-	-	2

*) the latest infection transmitted by blood products in Finland occurred in 1985

The updated statistics on HIV/AIDS can be found on internet: www.ktl.fi/ttr

TUBERCULOSIS

Tuberculosis – *Mycobacterium tuberculosis*

The registered cases include since 1995 all cases of tuberculosis verified by culture, as notified by the laboratories. In addition, both the patients notified by a physician only in which the diagnosis was notified on basis of histological proof, and cases of pulmonary tuberculosis with positive sputum staining for tuberculosis bacilli were included, as in previous years.

In 2001, tuberculosis cases (494) decreased by eight per cent from 2000, when there were 537 cases. The total in 2001 was the lowest since the NIDR started functioning in 1995. The number of cases with culture confirmation, 409, in 2001 was nine per cent lower than in 2000 when it was 451. The overall incidence of tuberculosis was 9,5 cases per 100 000 population.

There were 317 cases of pulmonary tuberculosis (incidence 6,1 per 100 000), and 177 cases of non-pulmonary tuberculosis. Among the pulmonary cases a positive sputum stain for TB was reported in 49 per cent. In eight per cent of the pulmonary cases no sputum stain for TB was performed, or this information was missing.

Out of all cases 375 (76 %) were based on notifications sent by both a physician and a laboratory, 36 (7 %) on laboratory notification only, and 83 (17 %) on physician notification only. As before, the notifications made by physicians, which did not link to a laboratory notification with a *M. tuberculosis* finding, were linked to laboratory notifications on atypical mycobacteria. Due to recently adopted continuous checking systems in the register for reducing this misclassification, no such cases were any more found during the compilation of the 2001 annual report.

In 2001, tuberculosis was registered in 68 (14 % per cent of all cases) persons born abroad or with a nationality other than Finland. Among these, 60 (88 %) were below 50 years of age. Out of these cases, 41 were pulmonary and 27 non-pulmonary.

The antimicrobial susceptibility situation in Finland is good. In 2001, four strains with multireresistance (resistant at least to isoniazide and rifampin) were detected.

Table 10.
The age and sex distribution of tuberculosis cases 2001

	Pulmonary tbc		**Tbc, other**		
Age	male	female	male	female	**Total**
0-4	-	-	-	1	1
5-9	1	-	1	-	2
10-14	-	-	-	3	3
15-19	2	2	1	1	6
20-24	3	5	3	3	14
25-29	8	5	3	2	18
30-34	11	2	3	6	22
35-39	5	8	2	2	17
40-44	13	4	-	8	25
45-49	15	7	2	3	27
50-54	19	6	3	5	33
55-59	13	5	6	2	26
60-64	21	10	5	6	42
65-69	18	7	8	8	41
70-74	21	11	8	12	52
75-	55	40	25	45	165
total	205	112	70	107	494

RESISTANT BACTERIA

Methicillin-resistant *Staphylococcus aureus* (MRSA)

Over 90% of the 340 MRSA isolates notified to the National Infectious Disease Register were also sent to the reference laboratory at the KTL for confirmation and further studies. Less than 10% of all isolates sent to the reference laboratory, and confirmed as MRSA, lacked the notification. A total of 325 *S. aureus* strains were confirmed as MRSA by the mecA-PCR method. These strains were typed by phages and pulsed-field electrophoresis (PFGE), and ribotyped, if necessary. According to molecular typing, 32 (10%) of the strains were sporadic. The most common strain type was Mikkeli II clone or it's subclones. This strain type was found all over Finland and it caused small clusters in hospitals. Sporadic isolates and outbreaks of this common clone are difficult to distinguish without more detailed local background information. In 2001, the largest outbreaks of MRSA occurred in Pirkanmaa (Belgium EC-3 clone), Keski-Suomi (Kokkola clone), and Etelä-Savo (Vaalijala clone). In the health care district of Itä-Savo, there were also two small clusters (Kerimäki and Kokkola clones). None of the strains that caused outbreaks in 2001 were multi-resistant, except the one found in Pirkanmaa.

Figure 13.

MRSA notifications 1995-2001

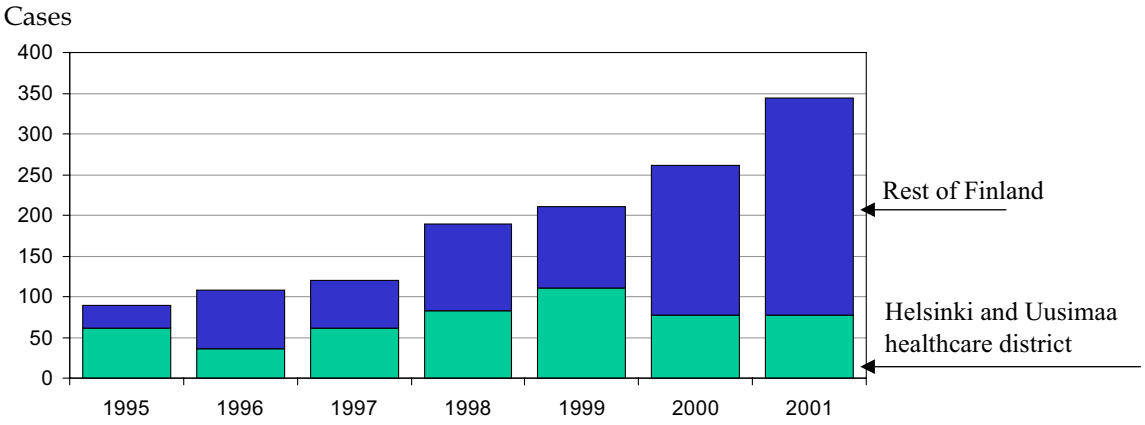


Table 11.
All notified MRSA findings and the proportion of MRSA in Staphylococcus aureus findings from blood, 1995-2001

Year	All MRSA findings	*S. aureus* findings from blood	MRSA findings in blood and their proportion of all *S. aureus* findings from blood. (%)
1995	89	627	2 (0,3)
1996	108	667	0 (0)
1997	120	746	4 (05)
1998	189	717	5 (0,7)
1999	211	812	8 (1,0)
2000	261	849	4 (0,5)
2001	344	887	4 (0,5)
total	1 322	5 305	27 (0,5)

Vancomycin - resistant enterococci (VRE)

In 2001, 13 strains of VRE were sent for further molecular characterisation. One of these was *Enterococcus casseliflavus*, possessing both *vanC* and *vanB* genes. Most of the VRE strains were unique. One strain of *Enterococcus faecium* was indistinguishable from the strain that caused an outbreak a few years ago in Helsinki (Helsinki I clone).

Penicillin-resistant pneumococcus

Table 12.

All notified *S. pneumoniae* findings with resistance (PRP) or reduced susceptibility to penicillin (PIP) and the proportion of *S. pneumoniae* findings from blood with PRP or PIP, 1995-2001

Year	PIP/PRP - findings*	*S. pneumoniae* findings		PIP/PRP findings		Reduced susceptibility to penicillin of *S. pneumoniae* from blood (%)
		Blood	CSF	Blood	CSF	
1995	43	478	34	4	0	0,8
1996	93	524	33	4	0	0,7
1997	146	577	29	6	0	1,0
1998	142/62	543	35	10/4	1/0	2,6
1999	171/60	548	33	11/4	1/0	2,8
2000	236/64	592	25	16/5	1/0	3,7
2001	214/67	645	13	21/6	0/1	4,3
1995-2001	1 325	3 907	202	58/33	3/1	2,4

* During 1995-1997 only *S. pneumoniae* findings with resistance to penicillin (PRP) were notifiable. From 1998 also findings with reduced susceptibility to penicillin (PIP) have been notified.

OTHER BACTERIAL INFECTIONS

Diphtheria – *Corynebacterium diphtheriae*

In November 2001, a 3 month old, previously healthy, unvaccinated infant died of diphtheria in south eastern Finland. The illness began with laryngeal cough and low grade fever, and progressed in one week to severe respiratory distress requiring mechanical ventilation. The child died of toxic illness despite intensive care and antimicrobial and antitoxin treatment.

In cultures of close contacts, a 7-year-old sister of the patient was identified as an asymptomatic carrier of *C. diphtheriae*. She had received a full course of diphtheria, tetanus, and pertussis (DTP) vaccines. All other cultures from close contacts of both the patient and his sister were negative. Many of the people with whom the patient and his sister had been in contact before the onset of illness had recently visited Russia. According to DNA typing results, the bacterial strain appeared similar to *C. diphtheriae* var mitis strains recently detected circulating in Russia.

In December, an unvaccinated, middle-aged man from southwestern region became ill with sore throat and *Corynebacterium diphtheriae* (biotype mitis) was cultured from a throat swab. He recovered well with antibiotic therapy. The source of the infection remained unknown. No carriers were identified in throat swabs taken from close contacts and at the work place. No direct connection to Russia was identified.

According to serological studies done in 1995-96, young adults in Finland have good protection against diphtheria. The antibody concentrations wane with increasing age, however, and are substantially lower in middle aged and older age groups. The small number of diphtheria cases identified in Finland in recent years despite extensive traffic across the border implies that the overall immunity of the population is relatively good. Adults, however, particularly women, should ensure that they have received a full series of three doses of diphtheria vaccine and booster doses every 10 years, especially when travelling to Russia or the Baltic states.

Lyme borreliosis – *Borrelia burgdorferi*

The number of Borrelia cases, 691, was lower than in the record year 2000, but definitely higher than during all years in the late 1990s. The highest number of cases was observed in August and September. However, cases were distributed throughout the year. In Ahvenanmaa district the incidence was still very high, almost 1 000 cases/ 100 000 population. Also in Kymenlaakso district the incidence was higher than the national average.

Meningococcal infection – *Neisseria meningitidis*

The number of invasive meningococcal cases, 51, was of the same magnitude as during the preceding years and the serogroup distribution unchanged. The rare serogroup W135, which in 2001 caused one case, has been associated with pilgrimage journeys to Saudi Arabia. In this case, however, there was no travel background.

Table 13.

Cases of invasive meningococcal infection by serogroup in 1995-2001

serogroup	1995	1996	1997	1998	1999	2000	2001
A	-	-	-	-	-	-	-
B	50	59	36	44	35	30	34
C	22	15	5	7	9	11	9
Y	-	3	3	2	8	2	4
W135	-	-	-	-	1	3	1
not known	6	2	2	1	4	2	3
total	78	79	46	54	57	48	51

Hib –*Haemophilus influenzae* type b

Altogether 49 cases of invasive *Haemophilus influenzae* infection were notified, four of them caused by serotype b. All of those with invasive infection caused by Hib were at least 60 years old, except for one middle-aged case.

Tularemia – *Francisella tularensis*

In 2001 only 29 tularemia cases were notified, which is the smallest number after the national surveillance began in 1995. The largest outbreak so far in Finland occurred the preceding year 2000, with nearly one thousand notified cases. The majority of cases in 2001 occurred in the Pohjanmaa and Kymenlaakso areas.

OTHER VIRAL INFECTIONS

Puumalavirus

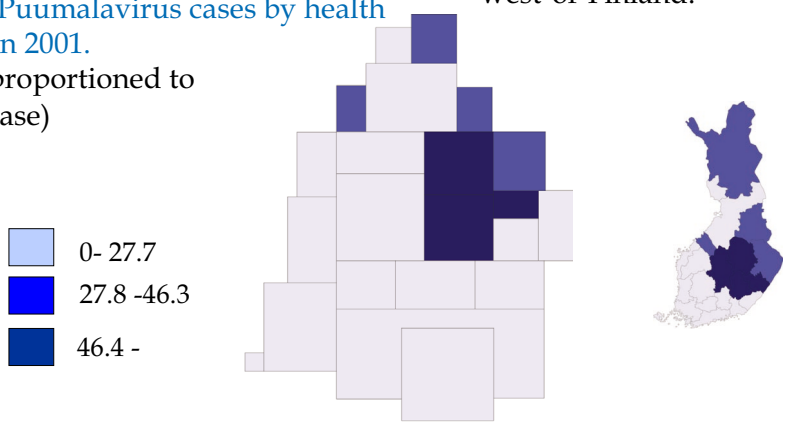
The cyclic nature of Puumalavirus infections mirrors that of its reservoir the bank vole, and usually follows a 3-year cycle, with 2 years of high numbers of cases, followed by 1 year with lower numbers. In Finland, 2001 represented the first in a 2-year high cycle, with 1057 notified cases, following 774 cases in 2000. Since laboratory-confirmed data have been collected for the NIDR system in 1995, the highest numbers of cases have been observed in the 2-year cycle for 1998 (1305) and 1999 (2300).

As in previous years, in 2001 most cases were observed in males, with an overall male:female ratio of 1.8 : 1. Most male cases (69%) were between 25 and 54 years old, while most female cases (71%) were aged between 30 and 59 years.

In 2001, the numbers of cases of Puumalavirus followed the usual trend of increasing as winter approached (October to December), and were at their lowest in February-April. This can be explained by the movement of the bank vole population, which has greatest human contact during early winter months (when they start to enter buildings for warmth) and their low prevalence during and at the end of winter (when they are still in hibernation).

As to be expected from the transmission route and reservoir of this infection, Puumalavirus has a noticeable geographical distribution in Finland. In 2001 the highest rates of infection (over 69 per 100 000) were seen in Itä-, Etelä- and Pohjois-Savo healthcare districts in the east of the country, compared with very low rates (below 10 per 100 000) in the Southwest of Finland.

Figure 14.
Incidence of Puumalavirus cases by health care district in 2001.
(size of hcd proportioned to population base)



Tick-borne encephalitis (TBE)

The all-time record year 2000 was followed by another year of exceptionally high incidence: in 2001 the number of notified TBE cases (33) was several times higher than the long-term average, especially if compared to figures from 1980s before the current notification system. Increased incidences have been reported from several countries around the Baltic Sea and may be a result of climatic changes.

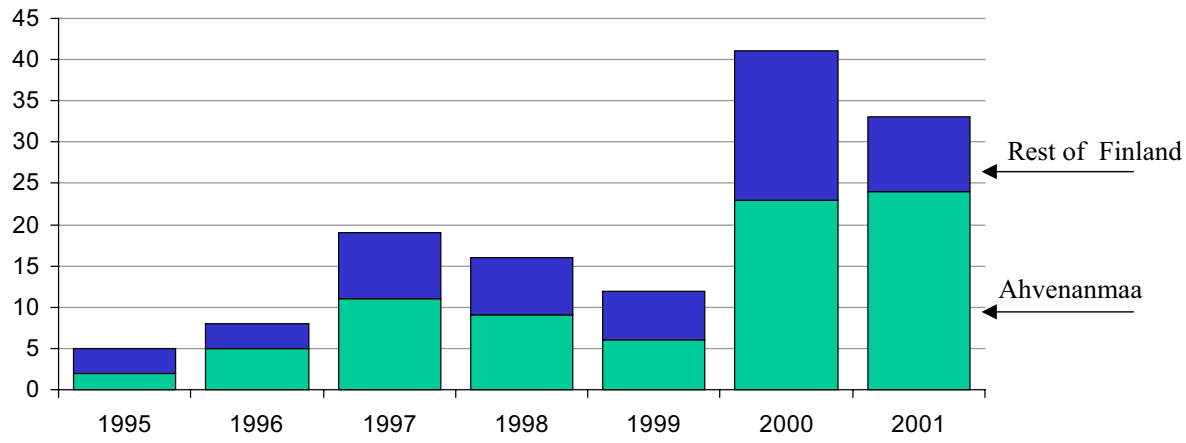
TBE is a serious disease; up to 40 per cent of clinically ill patients suffer from serious and long-term sequaleae. Clinically severe cases are more common among elderly victims although seroprevalence studies suggest that infections are as common in all age groups.

Ahvenanmaa is still the black spot for the disease. In 2001 21 of the notified 33 cases were from Ahvenanmaa. Also the southwestern archipelago is a risk area, but incident cases have even been reported from other areas on the southern and western coast. It seems possible that new disease foci may emerge: Recently both in Sweden and Germany disease clusters have been detected in new areas.

An effective vaccine is available. Vaccination of the entire adult population of Ahvenanmaa may prove necessary if the current increasing trend continues.

Figure 15.

Tick-borne encephalitis cases notified in Ahvenanmaa and the rest of Finland in 1995-2001



MALARIA

Malaria

38 cases of malaria were diagnosed in Finland in 2001. The species was *Plasmodium falciparum* in 16 cases, *P. vivax* in 16 cases and *P. ovale* in six cases.

Most of the infections (22 cases, 58%) and all of the *P. falciparum* infections were acquired in Africa. Eleven of them were acquired in West Africa, six in East Africa and five in central or southern Africa. Most of the *P. vivax* infections, eight cases, came from India and Pakistan. Five cases of *P. vivax* malaria were acquired in Indonesia. Two of these were acquired in the island of Sumba and three in the island of Lombok. One case of *P. vivax* malaria came from East Timor, one from Papua New Guinea and one from southern Africa. One of the *P. ovale* cases came from Guyana, and the other five cases came from Africa.

Most of the patients (26 patients, 69%) were Finnish citizens. Eighteen of them (47%)had been on a trip shorter than six months to malaria endemic areas. Seven patients were former immigrants and their family members who went to visit relatives in West Africa and did not take malaria prophylaxis. Eight immigrants from malaria endemic areas fell ill with malaria after coming to Finland for the first time. Four of the patients were Finns living in malaria endemic areas

Most of the patients (30 patients, 79%) had not taken malaria prophylaxis or had taken it irregularly.

Eight persons fell ill with malaria in spite of regular drug prophylaxis. Three had *P. ovale* and two had *P. vivax* infection. Only three of the patients had *P. falciparum* malaria in spite of regular drug prophylaxis, and in their case there was reason to suspect drug-resistant *P. falciparum* malaria. All of them came from Africa and they had used chloroquine either alone or with proguanil.

The annual number of imported malaria cases and the countries of origin has remained relatively constant over the past few years in Finland.

Findings in blood and cerebrospinal fluid

Table 14.

Blood culture findings in 1995-2001, adults (≥ 15 years)

Microbe/microbe group	1995	1996	1997	1998	1999	2000	2001
Bacteria							
Escherichia coli	1264	1374	1496	1462	1559	1565	1791
Staphylococcus aureus	556	610	671	637	727	792	835
Staphylococcus, other than aureus	518	576	549	573	653	785	809
Streptococcus pneumoniae	386	426	489	466	473	494	554
Enterococcus ssp.	226	250	261	280	286	321	388
Klebsiella ssp.	235	248	274	283	281	316	355
Streptococcus viridans group (S. milleri, S. bovis)	218	235	268	267	293	305	306
Pseudomonas ssp.	225	197	197	180	198	209	209
Enterobacter ssp.	94	130	152	159	137	154	189
Bacteroides ssp.	137	132	170	153	184	174	179
Streptococcus, other beta-hemolytic (C and G)	91	125	151	132	161	146	171
Streptococcus agalactiae	65	82	97	101	111	116	137
Streptococcus pyogenes	54	52	77	94	103	106	88
Clostridium ssp.	79	66	83	68	68	77	81
Diphteroids and propionibacteria	29	49	54	76	63	89	66
Haemophilus ssp.	10	19	19	29	30	32	49
Salmonella ssp.	46	28	23	31	49	24	39
Bacillus	14	17	13	18	15	36	37
Fusobacterium ssp.	23	22	23	34	28	23	32
Acinetobacter ssp.	28	33	24	18	24	31	27
Stenotrophomonas maltophilia	20	27	18	8	12	15	23
Neisseria meningitidis	27	30	10	13	22	18	23
Listeria monocytogenes	23	23	41	38	37	16	22
Campylobacter ssp.	12	14	10	11	10	14	17
Capnocytophaga canimorsus	4	5	10	3	8	6	7
Mycobacteria	15	11	1	8	-	6	6
Yersinia enterocolitica and pseudotuberculosis	3	8	4	9	8	4	6
Other enterobacteria	130	130	149	137	140	185	204
Other gram-positive bacilli	26	23	22	29	28	39	28
Other gram-positive cocci	60	58	44	62	58	62	57
Other gram-negative anaerobes	-	2	3	8	9	5	3
Other gram-negative bacteria	43	48	41	48	50	48	43
Other undefinable bacteria	-	-	1	1	-	-	1
Bacteria, total:	4661	5050	5445	5436	5825	6213	6782
Fungi							
Candida albicans	46	63	63	59	70	82	92
Other yeasts	28	17	23	31	35	42	49
Other fungi	2	-	2	7	1	-	1
Fungi, total:	76	80	88	97	106	124	142
Total:	**4737**	**5130**	**5533**	**5533**	**5931**	**6337**	**6924**

Table 15.

Blood culture findings in 1995-2001, children (0-14 years)

Microbe/microbe group	1995	1996	1997	1998	1999	2000	2001
Bacteria							
Staphylococcus, other than aureus	114	92	102	102	141	141	144
Streptococcus pneumoniae	92	98	88	77	77	98	91
Staphylococcus aureus	71	57	76	81	85	59	52
Escherichia coli	63	49	59	61	53	63	44
Streptococcus agalactiae	46	52	43	48	42	39	41
Streptococcus viridans group, S. milleri and S. bovis	35	35	36	32	33	27	34
Pseudomonas ssp.	4	8	10	11	2	7	12
Neisseria meningitidis	6	17	10	14	16	17	12
Streptococcus pyogenes	4	8	3	11	13	10	11
Enterococcus ssp.	21	19	12	14	12	10	11
Klebsiella ssp.	9	13	15	11	14	11	10
Enterobacter ssp.	13	10	10	10	12	8	6
Acinetobacter ssp.	7	5	4	6	7	6	5
Haemophilus ssp.	2	6	3	5	6	4	5
Bacillus	5	6	5	2	4	10	4
Diphteroids and propionibacteria	2	-	4	4	6	4	2
Stenotrophomonas maltophilia	1	-	6	6	2	2	2
Bacteroides ssp.	1	2	1	3	2	5	2
Streptococcus, other betahemolytic (C ja G)	3	-	1	6	1	2	1
Clostridium ssp.	4	1	2	4	1	1	1
Listeria monocytogenes	1	2	2	2	-	1	1
Salmonella ssp.	3	2	1	3	7	1	1
Campylobacter ssp.	-	-	-	-	2	2	1
Fusobacterium ssp.	1	6	4	2	5	4	1
Mycobacteria	-	-	-	-	-	-	-
Yersinia enterocolitica and pseudotuberculosis	2	-	-	-	-	-	-
Capnocytophaga canimorsus	-	-	-	-	-	-	-
Other enterobacteria	6	4	5	4	8	10	3
Other gram-positive bacilli	1	2	2	2	3	2	3
Other gram-positive cocci	4	7	5	7	15	12	9
Other gram-negative anaerobes	-	1	-	-	1	-	-
Other gram-negative bacteria	2	5	5	8	4	3	3
Other undefinable bacteria	-	-	-	1	-	-	-
Bacteria, total:	523	507	514	537	574	559	512
Fungi							
Candida albicans	11	4	3	3	13	7	4
Other yeasts	4	3	1	2	9	10	8
Other fungi	-	-	3	1	1	-	-
Fungi, total:	15	7	7	6	23	17	12
Total:	**538**	**514**	**521**	**543**	**597**	**576**	**524**

Table 16.
Cerebrospinal fluid culture findings in 1995-2001, adults (≥ 15 years)

Microbe/microbe group	1995	1996	1997	1998	1999	2000	2001
Bacteria							
Staphylococcus, other than aureus	7	15	13	31	36	34	53
Streptococcus pneumoniae	22	25	25	28	22	22	28
Neisseria meningitidis	35	39	21	20	19	13	13
Staphylococcus aureus	1	13	9	14	15	12	11
Diphteroids and propionibacteria	-	1	1	8	3	5	7
Pseudomonas ssp.	-	-	4	3	5	5	7
Enterococcus ssp.	1	1	4	5	4	4	5
Streptococcus viridans group, S. milleri and S. bovis	1	5	3	6	4	5	4
Listeria monocytogenes	9	4	7	10	3	4	4
Bacillus	-	-	1	2	1	3	4
Enterobacter ssp.	1	-	2	2	1	1	4
Haemophilus ssp.	-	2	5	3	3	3	4
Streptococcus agalactiae	1	4	-	-	1	4	2
Streptococcus, other betahemolytic (C and G)	-	4	-	-	1	-	2
Klebsiella ssp.	-	2	4	1	2	2	2
Acinetobacter ssp.	-	-	3	2	1	-	2
Mycobacteria	2	1	1	1	-	4	1
Escherichia coli	2	1	4	1	4	3	1
Salmonella ssp.	-	-	-	2	-	-	1
Yersinia enterocolitica and pseudotuberculosis	-	-	-	-	1	-	-
Stenotrophomonas maltophilia	1	-	-	-	-	-	-
Campylobacter ssp.	-	-	-	1	-	-	-
Capnocytophaga canimorsus	-	1	-	1	-	-	-
Bacteroides ssp.	-	-	-	-	1	-	-
Fusobacterium ssp.	-	1	-	-	1	1	-
Other enterobacteria	-	-	1	-	1	2	3
Other gram-positive bacilli	2	1	-	-	-	-	-
Other gram-positive cocci	-	2	1	2	2	1	1
Other gram-negative anaerobes	-	-	-	-	-	-	-
Other gram-negative bacteria	-	1	-	1	-	2	2
Other undefinable bacteria	-	-	-	-	-	2	1
Bacteria, total:	85	123	109	144	131	132	162
Fungi							
Candida albicans	-	1	-	1	2	2	-
Other yeasts	1	1	-	-	2	1	2
Other fungi	-	-	-	1	-	-	-
Fungi, total:	1	2	-	2	4	3	2
Total:	**86**	**125**	**109**	**146**	**135**	**135**	**164**

Table 17.
Cerebrospinal fluid culture findings in 1995-2001, children (0-14 years)

Microbe/microbe group	1995	1996	1997	1998	1999	2000	2001
Bacteria							
Neisseria meningitidis	10	9	12	16	11	11	9
Staphylococcus aureus	3	2	7	3	2	2	7
Staphylococcus, other than aureus	2	8	6	8	14	12	5
Streptococcus agalactiae	2	8	2	9	5	4	3
Streptococcus pneumoniae	12	8	4	7	11	3	3
Streptococcus viridans group, S. milleri and S. bovis	4	-	1	2	-	2	3
Escherichia coli	-	1	2	3	1	1	3
Haemophilus ssp.	3	1	-	3	2	2	3
Streptococcus pyogenes	-	-	1	-	1	-	1
Enterococcus ssp	-	1	4	1	2	1	-
Listeria monocytogenes	-	1	-	1	-	-	-
Bacillus	-	-	-	-	-	1	-
Diphteroids and propionibacteria	-	-	-	-	-	1	-
Klebsiella ssp.	-	-	-	-	-	1	-
Salmonella ssp.	-	-	-	-	1	-	-
Pseudomonas ssp.	-	-	-	1	-	-	-
Stenotrophomonas maltophilia	-	1	-	-	-	-	-
Acinetobacter ssp.	-	-	2	-	1	-	-
Bacteroides ssp.	-	-	-	-	1	-	-
Other enterobacteria	-	-	1	2	-	-	-
Other gram-positive cocci	-	2	2	-	1	-	3
Other gram-negative bacteria	-	1	-	-	-	-	1
Other undefinable bacteria	-	-	-	-	-	1	-
Bacteria, total:	36	43	44	56	53	42	41
Fungi							
Candida albicans	-	-	-	-	-	-	-
Other yeasts	-	-	-	-	-	-	-
Other fungi	-	-	-	1	-	-	-
Fungi, total:	-	-	-	1	-	-	-
Total:	**36**	**43**	**44**	**57**	**53**	**42**	**41**

Tables in Annex

Table in Annex 1

Cases notified to the Infectious Diseases Register by month in 2001

Notifications by physicians and laboratories have been combined (*) for category 1 and 2 infections, data for other microbes is based on laboratory notifications only.

	Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Respiratory pathogens													
Adenovirus	425	38	37	60	36	44	27	20	25	22	42	30	44
Bordetella pertussis	315	52	40	26	11	18	9	21	36	15	20	39	28
Chlamydia pneumoniae	243	36	12	40	13	20	9	11	11	4	20	38	29
Influenza A virus	932	293	527	94	7	1	2	-	-	1	-	1	6
Influenza B virus	250	25	32	66	95	28	1	-	1	1	-	-	1
Influenza, non-typed	369	105	193	47	22	..	..	..	..	..	..	..	2
Legionella*	17	2	-	3	-	2	-	1	2	-	1	2	4
Mycoplasma pneumoniae	1011	142	95	81	56	67	46	53	63	100	119	126	63
Parainfluenza virus	413	36	37	61	104	70	25	16	14	13	15	7	15
Respiratory syncytial virus	1892	67	74	134	247	222	144	49	33	31	64	158	669
Gastrointestinal pathogens													
Campylobacter	3969	261	210	253	277	235	265	637	612	344	417	268	190
Cryptosporidium	12	1	2	-	1	-	-	2	4	1	1	-	-
Entamoeba histolytica	44	4	2	2	6	6	2	2	3	3	7	5	2
Giardia lamblia	302	23	10	26	24	28	31	26	22	30	37	26	19
Escherichia coli EHEC*	18	-	1	2	4	-	3	1	3	2	-	1	1
Calicivirus	229	15	9	62	33	18	15	21	29	13	1	11	2
Rotavirus	1395	69	103	260	336	266	172	72	13	16	20	9	59
Salmonella Paratyphi*	7	-	-	-	1	-	-	1	1	-	3	1	-
Salmonella Typhi*	1	-	-	-	-	-	-	-	-	-	1	-	-
Salmonella, other	2734	261	203	233	178	180	230	290	367	253	234	187	118
Shigella*	223	20	21	16	9	10	6	16	37	49	22	13	4
Yersinia	728	56	31	55	67	88	110	84	64	50	53	36	34
Hepatitis pathogens													
Hepatitis A virus*	51	5	6	-	3	7	1	6	5	4	5	4	5
Hepatitis B virus, acute*	127	12	11	15	10	8	5	8	14	11	11	14	8
Hepatitis B virus, chronic*	299	30	12	28	25	36	38	19	22	17	20	33	19
Hepatitis C virus, acute*	128	8	8	12	8	19	7	6	13	12	19	12	4
Hepatitis C virus, chronic*	1362	142	120	136	113	103	100	101	116	117	117	120	77
Hepatitis D virus	2	1	-	-	-	-	-	-	-	-	1	-	-
Hepatitis E virus	5	-	1	-	-	1	1	1	-	1	-	-	-

	Total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
STD-pathogens													
Chlamydia trachomatis	12142	1185	902	913	987	1120	788	879	1215	1085	1158	1141	769
Neisseria gonorrhoeae*	247	26	23	11	26	25	14	26	22	21	18	17	18
Treponema pallidum*	159	8	19	10	13	12	9	13	23	16	9	16	11
HIV*	128	16	15	8	9	12	10	7	12	7	14	11	7
Mycobacteria													
M. tuberculosis, pulmonary*	317	22	23	38	24	34	27	33	19	27	30	22	18
M. tuberculosis, other*	177	16	11	15	19	10	18	20	8	14	14	18	14
Mycobacterium, atypical*	505	33	45	46	46	51	37	30	32	53	59	51	22
Resistant bacteria													
Enterococcus, VRE	15	-	1	1	3	2	1	-	1	2	2	1	1
S. pneumoniae, Pen-R	67	5	13	4	5	9	4	4	1	4	5	6	7
S. aureus, MRSA	340	18	12	34	18	21	21	29	37	32	55	34	29
Bacteria, other													
Borrelia burgdorferi	691	55	35	38	30	38	43	56	98	92	68	85	53
Corynebacterium diphtheriae*	2	-	-	-	-	-	-	-	-	-	-	1	1
Francisella tularensis	29	2	-	-	1	-	1	-	8	9	4	1	1
Haemophilus influenzae b*	4	-	-	1	-	-	1	1	-	-	-	-	1
Listeria*	28	4	1	-	3	3	-	1	6	3	3	4	-
Neisseria meningitidis*	51	5	6	4	8	3	7	1	1	3	6	4	3
S.pyogenes, blood/CSF	100	8	9	9	8	12	12	9	7	3	7	6	10
Viruses, other													
Coxsackie A	-	-	-	-	-	-	-	-	-	-	-	-	-
Coxsackie B	7		1	-	-	-	-	-	2	2	-	2	-
Echovirus	5	1	-	-	-	-	-	-	-	3	-	-	1
Enterovirus	266	18	14	5	17	10	1	3	15	29	74	62	18
Parvovirus	215	49	33	28	20	17	15	12	8	11	9	4	9
Poliovirus*	-	-	-	-	-	-	-	-	-	-	-	-	-
Puumalavirus	1057	43	10	8	5	14	29	54	70	89	127	247	361
Mumps virus*	2	-	-	-	-	1	1	-	-	-	-	-	-
Sindbisvirus	77	-	-	1	-	1	1	2	19	46	5	2	-
Tick-born encephalitis virus	33	-	-	-	-	-	1	4	9	9	6	4	-
Morbillivirus*	1	-	-	-	-	1	-	-	-	-	-	-	-
Rubella virus*	-	-	-	-	-	-	-	-	-	-	-	-	-
Parasites, other													
Echinococcus*	-	-	-	-	-	-	-	-	-	-	-	-	-
Plasmodium spp.*	38	4	3	1	3	5	9	4	6	1	-	1	1

Table in annex 2

Cases notified to the Infectious Diseases Register by healthcare district in 2001

Notifications by physicians and laboratories have been combined (*) for category 1 and 2 infections, data for other microbes is based on laboratory notifications only.

	total	HUS	VAR	SAT	KHÄ	PIR	PHÄ	KYM	EKA	ESA	ISA	PKA	PSA	KSU	EPO	VAA	KPO	PPO	KAI	LPO	LAP	AHV
Respiratory pathogens																						
Adenovirus	425	97	55	17	14	29	20	15	10	9	3	30	15	22	16	10	9	24	11	1	14	4
Bordetella pertussis	315	141	17	11	13	26	10	8	7	16	2	4	10	17	9	2	4	6	4	-	7	1
Chlamydia pneumoniae	243	85	20	11	4	4	-	3	8	2	4	13	4	15	33	16	3	8	5	3	1	1
Influenza A virus	932	278	217	49	34	62	10	33	31	19	20	35	27	17	3	4	2	42	13	-	36	-
Influenza B virus	250	56	97	10	13	11	1	6	2	5	1	13	3	3	1	1	-	3	9	-	14	1
Influenza, non-typed	369	219	8	..	..	..	50	..	..	..	2	..	..	78	3	..	..	..	..	9	..	..
Legionella*	17	6	-	1	2	1	-	1	-	1	-	-	-	-	-	-	-	2	1	1	1	-
Mycoplasma pneumoniae	1011	267	136	38	17	28	10	21	19	13	10	67	70	87	26	42	26	87	12	6	17	12
Parainfluenza virus	413	93	153	7	3	26	7	4	1	9	-	13	19	9	5	1	7	45	2	-	7	2
Respiratory syncytial virus	1892	780	143	87	59	155	75	50	45	15	9	47	54	14	53	49	31	140	32	17	31	6
Gastrointestinal pathogens																						
Campylobacter	3969	1843	234	110	86	379	124	146	83	53	38	82	121	143	69	85	37	194	35	27	61	19
Cryptosporidium	12	9	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Entamoeba histolytica	44	9	10	-	-	6	-	-	-	-	-	-	2	1	-	-	-	5	1	8	2	-
Giardia lamblia	302	145	49	-	2	30	4	2	2	-	1	6	7	11	1	9	5	7	1	14	5	1
Escherichia coli EHEC*	18	6	-	-	2	-	-	3	-	-	-	1	-	3	1	-	2	-	-	-	-	-
Calicivirus	229	41	31	21	18	22	12	11	-	9	1	11	1	1	-	4	-	14	1	..	31	-
Rotavirus	1395	266	34	131	106	138	61	51	58	34	25	39	44	95	134	26	-	12	71	2	22	13
Salmonella Paratyphi*	7	4	1	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Salmonella Typhi*	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Salmonella, other	2734	984	157	130	89	197	86	111	86	65	41	117	122	128	62	46	23	151	35	25	73	6
Shigella*	223	114	2	-	4	12	8	47	3	-	-	3	10	3	-	5	1	8	-	2	1	-
Yersinia	728	357	44	21	6	27	37	30	13	13	5	9	28	25	15	16	6	33	29	5	7	2
Hepatitis pathogens																						
Hepatitis A -virus*	51	32	2	1	1	1	-	2	-	-	-	-	-	2	4	-	-	1	1	2	2	-
Hepatitis B -virus, acute*	127	46	15	3	8	6	3	3	3	4	2	12	6	1	-	7	-	2	3	1	1	1
Hepatitis B -virus, chronic*	299	110	56	5	5	18	9	8	9	2	4	4	9	7	4	16	-	19	4	1	8	1
Hepatitis C -virus, acute*	128	46	21	3	5	4	4	2	5	2	1	3	15	3	1	2	-	8	1	-	2	-
Hepatitis C -virus, chronic*	1362	526	168	28	52	76	42	60	39	15	6	29	91	65	21	20	7	69	9	10	28	1
Hepatitis D -virus	2	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Hepatitis E -virus	5	3	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
STD-pathogens																						
Chlamydia trachomatis	12142	3402	1145	552	307	1150	402	334	246	239	118	406	538	838	309	289	134	811	205	179	489	49
Neisseria gonorrhoeae*	247	101	15	10	6	24	13	13	7	2	4	17	10	4	-	1	-	7	5	-	8	-
Treponema pallidum*	159	42	10	4	3	8	6	9	22	3	4	21	5	5	2	2	1	4	6	1	1	-
HIV*	128	96	4	2	2	4	-	1	3	-	1	2	1	3	1	2	1	4	1	-	-	-

	total	HUS	VAR	SAT	KHÄ	PIR	PHÄ	KYM	EKA	ESA	ISA	PKA	PSA	KSU	EPO	VAA	KPO	PPO	KAI	LPO	LAP	AHV
Mycobacteria																						
M. tuberculosis, pulmonary*	317	89	24	7	12	19	14	12	14	6	7	10	14	7	20	8	-	28	4	3	17	2
M. tuberculosis, other*	177	37	20	5	7	12	8	8	1	4	2	10	11	5	13	10	2	10	3	2	7	-
Mycobacterium atypical*	505	149	44	19	11	55	21	8	12	10	4	8	33	24	34	7	2	35	5	6	17	1
Resistant bacteria																						
Enterococcus, VRE	15	7	2	-	1	1	-	-	1	-	-	-	1	1	-	-	-	1	-	-	-	-
S. pneumoniae, Pen-R	67	34	1	-	-	9	-	-	2	-	2	-	-	2	-	-	-	7	-	6	4	-
S. aureus, MRSA	340	76	16	4	4	41	2	-	4	51	14	10	14	45	5	1	2	19	19	9	4	-
Bacteria, other																						
Borrelia burgdorferi	691	164	32	16	9	4	16	46	5	13	10	8	45	15	16	6	11	15	-	-	4	256
Corynebacterium diphtheriae*	2	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Francisella tularensis	29	1	-	3	-	-	1	9	-	1	-	-	1	3	6	-	-	4	-	-	-	-
Haemophilus influenzae b*	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
Listeria*	28	8	3	1	1	2	1	2	1	1	-	2	4	1	-	-	-	1	-	-	-	-
Neisseria meningitidis*	51	11	4	3	2	5	4	2	1	1	-	2	5	2	1	2	-	3	-	-	3	-
S. pyogenes, blood/CSF	100	33	9	1	6	8	8	4	2	2	3	-	2	6	2	1	1	6	2	2	2	-
Viruses, other																						
Coxsackie A	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coxsackie B	7	-	-	-	1	-	-	-	-	-	-	4	-	1	-	-	-	1	-	-	-	-
Echovirus	5	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Enterovirus	266	7	122	6	2	3	1	1	2	1	-	4	1	1	-	3	-	109	2	1	-	-
Parvovirus	215	73	35	1	8	9	4	18	2	3	3	16	18	5	-	3	6	8	2	1	-	-
Poliovirus*	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puumalavirus	1057	97	6	13	13	51	18	11	34	81	47	58	176	163	46	26	34	101	27	9	46	-
Mumps virus*	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
Sindbisvirus	77	7	1	2	2	17	-	-	1	9	2	5	6	11	7	1	1	4	1	-	-	-
Tick-born encephalitis virus	33	3	5	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	24
Morbillivirus*	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rubella virus*	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Parasites, other																						
Echinococcus*	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plasmodium spp.*	38	24	3	1	1	1	-	1	1	-	-	-	-	5	-	-	-	-	-	1	-	-

Abbrev.	Healthcare district	Population 31.12.2001
HUS	Helsinki and Uusimaa healthcare district	1 403 622
SAT	Satakunta healthcare district	229 521
PIR	Pirkanmaa healthcare district	452 091
KYM	Kymenlaakso healthcare district	182 259
ESA	Etelä-Savo healthcare district	105 957
PKA	Pohjois-Karjala healthcare district	172 497
KSU	Keski-Suomi healthcare district	264 762
VAA	Vaasa healthcare district	165 893
PPO	Pohjois-Pohjanmaa healthcare district	372 005
LPO	Länsi-Pohja healthcare district	67 800
AHV	Ahvenanmaa	26 008

Abbrev.	Healthcare district	Population 31.12.2001
VAR	Varsinais-Suomi healthcare district	454 734
KHÄ	Kanta-Häme healthcare district	65 509
PHÄ	Päijät-Häme healthcare district	207 007
EKA	Etelä-Karjala healthcare district	129 582
ISA	Itä-Savo healthcare district	65 858
PSA	Pohjois-Savo healthcare district	251 231
EPO	Etelä-Pohjanmaa healthcare district	194 929
KPO	Keski-Pohjanmaa healthcare district	77 651
KAI	Kainuu healthcare district	84 497
LAP	Lappi healthcare district	121 488
Total	**5 194 901**	

Population: Official Statistics of Finland 2002

Table in annex 3
Cases notified to the Infectious Diseases Register by province in 2001

Notifications by physicians and laboratories have been combined (*) for category 1 and 2 infections, data for other microbes is based on laboratory notifications only.

Province Population 31.12.2001	total 5 194 901	Etelä-Suomi 2 095 416	Länsi-Suomi 1 839 581	Itä-Suomi 588 106	Oulu 456 502	Lappi 189 288	Ahvenanmaa 26 008
Respiratory pathogens							
Adenovirus	425	156	158	57	35	15	4
Bordetella pertussis	315	179	86	32	10	7	1
Chlamydia pneumoniae	243	100	102	23	13	4	1
Influenza A virus	932	386	354	101	55	36	-
Influenza B virus	250	78	123	22	12	14	1
Influenza, non-typed	369	269	89	2	-	9	-
Legionella*	17	9	2	1	3	2	-
Mycoplasma pneumoniae	1011	335	383	159	99	23	12
Parainfluenza virus	413	108	208	41	47	7	2
Respiratory syncytial virus	1892	1009	532	125	172	48	6
Gastrointestinal pathogens							
Campylobacter	3969	2284	1057	292	229	88	19
Cryptosporidium	12	10	-	-	-	-	2
Entamoeba histolytica	44	9	17	2	6	10	-
Giardia lamblia	302	155	105	14	8	19	1
Escherichia coli EHEC*	18	11	6	1	-	-	-
Calicivirus	229	82	79	22	15	31	-
Rotavirus	1395	542	591	142	83	24	13
Salmonella Paratyphi*	7	4	2	1	-	-	-
Salmonella Typhi*	1	1	-	-	-	-	-
Salmonella, other	2734	1362	743	339	186	98	6
Shigella*	223	176	23	13	8	3	-
Yersinia	728	443	154	55	62	12	2
Hepatitis pathogens							
Hepatitis A virus*	51	35	10	-	2	4	-
Hepatitis B virus, acute*	127	63	32	24	5	2	1
Hepatitis B virus, chronic*	299	141	106	19	23	9	1
Hepatitis C virus, acute*	128	62	34	21	9	2	-
Hepatitis C virus, chronic*	1362	719	385	141	78	38	1
Hepatitis D virus	2	1	-	1	-	-	-
Hepatitis E virus	5	3	1	1	-	-	-

Province	total	Etelä-Suomi	Länsi-Suomi	Itä-Suomi	Oulu	Lappi	Ahvenanmaa
Population 31.12.2001	5 194 901	2 095 416	1 839 581	588 106	456 502	189 288	26 008
STD-pathogens							
Chlamydia trachomatis	12142	4694	4417	1298	1016	668	49
Neisseria gonorrhoeae*	247	140	54	33	12	8	-
Treponema pallidum*	159	83	32	32	10	2	-
HIV*	128	102	17	4	5	-	-
Mycobacteria							
M. tuberculosis, pulmonary*	317	141	85	37	32	20	2
M. tuberculosis, other*	177	61	67	27	13	9	-
Mycobacterium, atypical*	505	201	185	55	40	23	1
Resistant bacteria							
Enterococcus, VRE	15	9	4	1	1	-	-
S. pneumoniae, Pen-R	67	36	12	2	7	10	-
Staphylococcus aureus, MRSA	340	86	114	89	38	13	-
Bacteria, other							
Borrelia burgdorferi	691	240	100	76	15	4	256
Corynebacterium diphtheriae*	2	1	1	-	-	-	-
Francisella tularensis	29	11	12	2	4	-	-
Haemophilus influenzae b*	4	2	-	-	2	-	-
Listeria*	28	13	7	7	1	-	-
Neisseria meningitidis*	51	20	17	8	3	3	-
Streptococcus pyogenes, blood/CSF	100	53	28	7	8	4	-
Viruses, other							
Coxsackie A	0	-	-	-	-	-	-
Coxsackie B	7	1	1	4	1	-	-
Echovirus	5	-	5	-	-	-	-
Enterovirus	266	13	135	-	111	1	-
Parvovirus	215	105	59	40	10	1	-
Poliovirus*	0	-	-	-	-	-	-
Puumalavirus	1057	176	339	359	128	55	-
Mumps virus*	2		2	-	-	-	-
Sindbisvirus	77	10	40	22	5	-	-
Tick-born encephalitis virus	33	3	6	-	-	-	24
Morbillivirus*	1	1	-	-	-	-	-
Rubella virus*	0	-	-	-	-	-	-
Parasites, other							
Echinococcus*	0	-	-	-	-	-	-
Plasmodium spp.*	38	27	10	-	-	1	-

Population: Official Statistics of Finland 2002

Table in annex 4

Microbial findings notified by laboratories by month in 2001

	total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Respiratory pathogens													
Adenovirus	425	38	37	60	36	44	27	20	25	22	42	30	44
Bordetella pertussis	315	52	40	26	11	18	9	21	36	15	20	39	28
Chlamydia pneumoniae	243	36	12	40	13	20	9	11	11	4	20	38	29
Influenza A virus	932	293	527	94	7	1	2	-	-	1	-	1	6
Influenza B virus	250	25	32	66	95	28	1	-	1	1	-	-	1
Influenza, non-typed	369	105	193	47	22	-	-	-	-	-	-	-	2
Legionella	17	2	-	3	-	2	-	1	2	-	1	2	4
Mycoplasma pneumoniae	1011	142	95	81	56	67	46	53	63	100	119	126	63
Parainfluenzavirus	413	36	37	61	104	70	25	16	14	13	15	7	15
Respiratory syncytial virus	1892	67	74	134	247	222	144	49	33	31	64	158	669
Gastrointestinal pathogens													
Campylobacter	3969	261	210	253	277	235	265	637	612	344	417	268	190
Cryptosporidium	12	1	2	-	1	-	-	2	4	1	1	-	-
Entamoeba histolytica	44	4	2	2	6	6	2	2	3	3	7	5	2
Escherichia coli EHEC	18	-	1	2	4	-	3	1	3	2	-	1	1
Giardia lamblia	302	23	10	26	24	28	31	26	22	30	37	26	19
Calicivirus	229	15	9	62	33	18	15	21	29	13	1	11	2
Rotavirus	1395	69	103	260	336	266	172	72	13	16	20	9	59
Salmonella Paratyphi	7	-	-	-	1	-	-	1	1	-	3	1	-
Salmonella Typhi	1	-	-	-	-	-	-	-	-	-	1	-	-
Salmonella, other	2734	261	203	233	178	180	230	290	367	253	234	187	118
Shigella	222	20	21	16	9	10	6	15	37	49	22	13	4
Vibrio cholerae	1	-	-	-	-	-	-	-	-	1	-	-	-
Yersinia	728	56	31	55	67	88	110	84	64	50	53	36	34
Hepatitis pathogens													
Hepatitis A virus	50	4	6	-	3	7	1	6	5	4	5	4	5
Hepatitis B virus	363	36	21	38	25	36	34	24	33	27	29	37	23
Hepatitis C virus	1456	148	124	147	121	120	103	104	125	126	132	127	79
Hepatitis D virus	2	1	-	-	-	-	-	-	-	-	1	-	-
Hepatitis E virus	5	-	1	-	-	1	1	1	-	1	-	-	-

	total	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
STD-pathogens													
Chlamydia trachomatis	12142	1185	902	913	987	1120	788	879	1215	1085	1158	1141	769
Neisseria gonorrhoeae	241	25	23	11	25	25	11	26	22	20	18	17	18
Treponema pallidum	146	8	17	10	12	11	7	12	21	15	7	15	11
HIV	128	16	15	8	9	12	10	7	12	7	14	11	7
Mycobacteria													
Mycobacterium tuberculosis	409	32	27	44	35	38	37	47	24	34	33	30	28
Mycobacterium, atypical	488	31	43	46	45	49	35	28	29	50	59	51	22
Resistant bacteria													
Enterococcus, VRE	15	-	1	1	3	2	1	-	1	2	2	1	1
S. pneumoniae (Pen I)	241	13	27	20	29	34	24	12	12	9	21	24	16
S. pneumoniae (Pen R)	67	5	13	4	5	9	4	4	1	4	5	6	7
Staphylococcus aureus, MRSA	340	18	12	34	18	21	21	29	37	32	55	34	29
Bacteria, other													
Borrelia burgdorferi	691	55	35	38	30	38	43	56	98	92	68	85	53
Corynebacterium diphtheriae	2	-	-	-	-	-	-	-	-	-	-	1	1
Francisella tularensis	29	2	-	-	1	-	1	2	8	9	4	1	1
Haemophilus influenzae b	4	-	-	1	-	-	1	1	-	-	-	-	1
Listeria monocytogenes	24	2	-	-	3	3	-	1	6	3	2	4	-
Neisseria meningitidis	47	4	6	4	7	3	6	-	1	3	6	4	3
S. pyogenes, blood/CSF	100	8	9	9	8	12	12	9	7	3	7	6	10
Viruses, other													
Coxsackie A	0	-	-	-	-	-	-	-	-	-	-	-	-
Coxsackie B	7	-	1	-	-	-	-	-	2	2	-	2	-
Echovirus	5	1	-	-	-	-	-	-	-	3	-	-	1
Enterovirus	266	18	14	5	17	10	1	3	15	29	74	62	18
Parvovirus	215	49	33	28	20	17	15	12	8	11	9	4	9
Poliovirus	0	-	-	-	-	-	-	-	-	-	-	-	-
Puumalavirus	1057	43	10	8	5	14	29	54	70	89	127	247	361
Mumps virus	2	-	-	-	-	1	1	-	-	-	-	-	-
Sindbisvirus	77	-	-	1	-	1	1	2	19	46	5	2	-
Tick-born encephalitis virus	33	-	-	-	-	-	1	4	9	9	6	4	-
Morbillivirus	1	-	-	-	-	1	-	-	-	-	-	-	-
Rubella virus	0	-	-	-	-	-	-	-	-	-	-	-	-
Parasites, other													
Echinococcus	0	-	-	-	-	-	-	-	-	-	-	-	-
Plasmodium spp.	38	4	3	1	3	5	9	4	6	1	-	1	1